

Lenticular autostereoscopic displays also achieve an animation sequence of images if a high number of interlaced source frames are used. However, the ability to show animation within normal lenticular displays requires an exceptionally high number of source frames to be used since each pair of frames must contain an image that has not moved to such a degree that stereoscopic perception of the image is unable to be achieved. Thus, lenticular autostereoscopic animation is limited in that the displacement of objects between any two adjacent or closely related frames must be sufficiently small or negligible, so as not to interfere with the stereoscopic viewing of the adjacent source frames.

Thus, autostereoscopic displays not containing the limitations of presently existing lenticular screen displays or stereo pair images is desired.

SUMMARY OF THE INVENTION

The present invention overcomes the foregoing and other problems with a method and apparatus for a lenticular autostereoscopic display using random dot image patterns. The present invention comprises a display having a first layer containing a composite image frame. The composite image frame is produced by first generating a number of random dot image frames. Each image frame is a member of an image frame pair that when viewed stereoscopically produces a stereoscopic image. The plurality of random dot image frames are each subdivided into a number of vertical strips. These strips are then alternately interlaced to form the composite image frame. These interlaced random dot image frames are then compressed to create a composite image frame of a size substantially equal to the size of the original random dot image frames. A lenticular material is prepared according to parameters defining the size and spacing of the plurality of interlaced vertical strips of the composite image frame. This lenticular material is attached to the surface of the composite image frame, and a viewer autostereoscopically perceives the images formed by the image pairs created by adjacent or closely related groups of vertical strips of random dot image frames merely by viewing the image frames through the lenticular material.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention and the advantages thereof, reference is now made to the following Detailed Description taken in conjunction with the accompanying Drawings in which:

FIGS. 1a and 1b are a flow diagram illustrating the method for generating a lenticular autostereoscopic display using random dot patterns;

FIG. 2 is an illustration of a random dot stereo pair;

FIG. 3 is an illustration of a random dot stereo pair independent sequence;

FIGS. 4a and 4b are flow diagrams more fully illustrating the procedure for interlacing a plurality of image frames;

FIG. 5 is an illustration of the lenticular autostereoscopic display of the present invention using a pair of interlaced random dot image frames; and

FIG. 6 is an illustration of a lenticular autostereoscopic display of the present invention using a plurality of interlaced random dot image frames.

DETAILED DESCRIPTION

Referring now to the Drawings, and more particularly to FIG. 1, wherein there is illustrated a method for producing the lenticular autostereoscopic displays using random dot patterns of the present invention. It is to be understood that while the following description refers to the use of random dot stereo pairs, the use of any type of random pattern stereo pair will function as well in the present invention. Initially, the number of random dot

